WE CLAIM:

1. A gene-therapy method of activating or enhancing a T-cell response in a patient with a tumor, comprising administering to said patient a pharmaceutical composition comprising: (A) an expressible nucleotide sequence for a soluble costimulatory factor and (B) a vector, such that (i) said factor is expressed by the tumor cells or the tumor-related cells, and (ii) said T-cell response thereby is activated or enhanced against said tumor.

2. The method according to claim 1, wherein said vector is targeted to tumor cells or tumor-related cells.

3. The method according to claim 2, wherein said vector is a viral vector.

4. The method according to claim 3, wherein said viral vector is selected from the group consisting of viral families, retroviridae, reoviridae, adenoviridae, parvoviridae, herpesviridae, poxviridae, hepatitis delta virus, and baculovirus.

5. The method according to claim 2, wherein said vector is a non-viral vector.

6. The method according to claim 5, wherein said non-viral vector is a molecular conjugate vector or a synthetic virus.

7. The method according to claim 1, wherein said administrating comprises introducing said composition directly into said tumor or a local area of said tumor.

8. The method according to claim 7, wherein said administering comprises directly injecting said nucleotide sequence, or directly injecting said nucleotide sequence conjugated to a liposome carrier.

9. The method according to claim 7, wherein said vector is a viral vector.

10. The method according to claim 8, wherein said viral vector is selected from the group consisting of viral families, retroviridae, reoviridae, adenoviridae, parvoviridae, herpesviridae, poxviridae, hepatitis delta virus, and baculovirus.

11. The method according to claim 7, wherein said vector is a non-viral vector.

12. The method according to claim 1, wherein said factor is selected from the group consisting of B7-1, B7-2, B7-3, CD40, CD40 ligand, CD72, CD24, LFA-3, ICAM-1, CD70, CD2, CD48, 4-1BB, 4-1BB ligand, and LIGHT.

13. The method according to claim 12, wherein said factor comprises two extracellular domains.

14. The method according to claim 1, wherein said factor comprises an immunoglobulin Fc region.

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15. The method of claim 1, wherein said factor comprises a dimer.

16. The method of claim 15, wherein the monomers of said dimer are connected by a linker.

17. The method of claim 1, wherein said vector is a viral vector.

18. The method of claim 1, wherein said vector is a non-viral vector.

19. The method of claim 1, wherein said tumor is selected from the group consisting of astrocytoma, oligodendroglioma, meningioma, neurofibroma, glioblastoma, ependymoma, Schwannoma, neurofibrosarcoma, medulloblastoma, germ cell tumor, chordoma, pineal tumor, choroid plexus papilloma, pituitary tumor, and vascular tumor.

20. The method of claim 1, wherein said tumor cells or tumor-related cells are selected from the group consisting of melanoma cells, pancreatic cancer cells, prostate carcinoma cells, head and neck cancer cells, breast cancer cells, lung cancer cells, colon cancer cells, ovarian cancer cells, renal cancer cells, neuroblastomas, squamous cell carcinomas, hepatoma cells, and mesothelioma and epidermoid carcinoma cells.

21. The method of claim 1, wherein said administering further comprises delivering to said patient at least one expressible nucleotide sequence coding for an immune modulator.

22. The method of claim 21, wherein said immune modulator is selected from the group consisting of a cytokine, a chemokine, and a membrane-bound costimulatory molecule.

23. A pharmaceutical composition comprising (A) a vector that contains gene encoding a soluble costimulatory factor and (B) a pharmaceutically compatible carrier.

24. A gene-therapy method of activating or enhancing a T-cell response in a patient with a tumor, comprising administering to said patient a pharmaceutical composition comprising: an expressible nucleotide sequence for a soluble costimulatory factor such that (i) said factor is expressed by the tumor cells or the tumor-related cells, and (ii) said T-cell response thereby is activated or enhanced against said tumor.

25. The method according to claim 24, wherein said administrating comprises introducing said composition directly into said tumor or a local area of said tumor.

26. The method according to claim 24, wherein said factor is selected from the group consisting of B7-1, B7-2, B7-3, CD40, CD40 ligand, CD72, CD24, LFA-3, ICAM-1, CD70, CD2, CD48, 4-1BB, 4-1BB ligand, and LIGHT.

27. The method according to claim 26, wherein said receptor comprises two extracellular domains.

28. The method of claim 24, wherein said tumor is selected from the group consisting of astrocytoma, oligodendroglioma, meningioma, neurofibroma, glioblastoma, ependymoma, Schwannoma, neurofibrosarcoma, medulloblastoma, germ cell tumor, chordoma, pineal tumor, choroid plexus papilloma, pituitary tumor, and vascular tumor.

29. The method of claim 24, wherein said tumor cells or tumor-related cells are selected from the group consisting of melanoma cells, pancreatic cancer cells, prostate carcinoma cells, head and neck cancer cells, breast cancer cells, lung cancer cells, colon cancer cells, ovarian cancer cells, renal cancer cells, neuroblastomas, squamous cell carcinomas, hepatoma cells and mesothelioma and epidermoid carcinoma cells.

30. The method of claim 24, wherein said administering comprises delivering to said patient at least one expressible nucleotide sequence coding for at least one immune modulator.

31. The method of claim 30, wherein said immune modulator is selected from the group consisting of cytokines, chemokines, and membrane-bound costimulatory molecules.

32. A pharmaceutical composition comprising (A) a gene encoding a soluble costimulatory factor and (B) a pharmaceutically compatible carrier.

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